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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,245	06/26/2003	Hiroshi Nishikawa	P23521	4244
7055	7590	06/05/2006	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			DANIELSEN, NATHAN ANDREW	
			ART UNIT	PAPER NUMBER
			2627	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/606,245	NISHIKAWA, HIROSHI	
	<b>Examiner</b>	<b>Art Unit</b>	
	Nathan Danielsen	2627	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 1-16 are pending.

***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's admitted prior art (hereinafter the AAPA), in view of Matsui (US Patent 5,787,064).

Regarding claims 1 and 9, the AAPA discloses an optical head, comprising:

a light emitting device that emits a light beam (¶ 4);

a deflector that deflects the light beam emitted by the light emitting device (part of prism unit in ¶ 4);

an objective lens that converges the light beam emerged from the deflector onto an optical disc (¶ 4); and

an error signal detecting system that generates a servo signal for servo control based on the light beam reflected by the optical disc (¶ 4),

wherein said deflector includes a prism having a first surface into which the light beam from said light emitting device enters, a second surface from which the light beam

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proceeding toward said objective lens emerges, and a third surface from which the light beam reflected by the optical disc emerges, the light beam emerged from the third surface proceeding toward said error signal detecting system (§ 4).

Further regarding claim 1, the AAPA fails to disclose where said prism satisfies a condition:

$$\theta_1 = -\theta_2$$

where  $\theta_1$  represents an angle which the second surface forms with respect to the first surface, and  $\theta_2$  represents an angle which the third surface forms with respect to the first surface, polarity of each of the angles  $\theta_1$  and  $\theta_2$  being defined depending on whether the each of the angles  $\theta_1$  and  $\theta_2$  has counterclockwise direction or has clockwise direction.

In the same field of endeavor, Matsui discloses a prism satisfying the condition:  $\theta_1 = -\theta_2$  (see figure 4 and note that both halves of the beam splitter 114 each have two 45° angles, where the third surface is considered to be the diagonal joint bisecting the beam splitter).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the optical system of the AAPA by providing a prism satisfying the condition  $\theta_1 = -\theta_2$ , as taught by Matsui, for the purpose of providing a compact optical head apparatus having simple beam paths (col. 3, lines 18-19).

Further regarding claim 9, the AAPA fails to disclose where said prism satisfies a condition:

$$-\pi/1080 \text{ radian} \leq \alpha_1 + \beta_1 \leq \pi/1080 \text{ radian}$$

where  $\alpha_1$  represents an emergence angle which the light beam emerging from the second surface and proceeding toward said objective lens forms with respect to a normal to the second surface,  $\beta_1$  represents an emergence angle which the light beam emerging from the third surface and proceeding toward said error signal detecting system forms with respect to a normal to the third surface, polarity of each of the angles  $\alpha_1$  and  $\beta_1$  being defined depending on whether the each of the angles  $\alpha_1$  and  $\beta_1$  has counterclockwise direction or has clockwise direction.

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In the same field of endeavor, Matsui discloses a prism satisfying the condition:  $-\pi/1080$  radian  $\leq \alpha_1 + \beta_1 \leq \pi/1080$  radian (see figure 4 and note that collimated light enters and leaves each surface of the beam splitter substantially perpendicular to the surface which is entering or leaving).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the optical system of the AAPA by providing a prism satisfying the condition  $-\pi/1080$  radian  $\leq \alpha_1 + \beta_1 \leq \pi/1080$  radian, as taught by Matsui, for the purpose of providing a compact optical head apparatus having simple beam paths (col. 3, lines 18-19).

Regarding claims 2 and 10, the AAPA discloses where said error signal detecting system includes a beam splitting system which divides the light beam reflected by the optical disc into a plurality of beams including a pair of beams for generating the servo signal and causes the pair of beams to defocus, with respect to a predetermined focal plane, in positive and negative directions, respectively (§§ 5 and 6).

Regarding claims 3 and 11, the AAPA discloses where said error signal detecting system further includes:

- a pair of sensors for the servo signal, the pair of beams divided by the beam splitting system impinging on the pair of sensors, respectively (§ 6); and
- a signal processing unit that generates the servo signal based on outputs of the pair of sensors (inherent in §§ 5 and 6).

Regarding claims 4 and 12, the AAPA discloses where the servo signal generated by the pair of sensors includes a focus error signal and a tracking error signal (§ 10).

Regarding claims 5 and 13, the AAPA discloses where said error signal detecting system generates the servo signal in accordance with Spot Size method and Push-Pull method (§ 10).

Regarding claims 6 and 14, the AAPA discloses where the plurality of beams divided by the beam splitting system includes a beam for a data signal (§ 5).

Regarding claims 7 and 15, the AAPA discloses where the first surface is formed as a beam splitting surface (§ 5).

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Regarding claims 8 and 16, the AAPA discloses where the first surface is formed as a half mirror surface (¶ 5).

***Citation of Relevant Prior Art***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Takahashi et al (US Patent 5,073,888) disclose the operation of a Wollaston prism;
- b. Koyama (US Patents 5,293,371 and 5,546,373), Whitehead (US Patent 5,311,496), Tanaka et al (US Patent 5,327,417), Hsu et al (US Patent 5,541,908), and Sun et al (US Patent 7,050,381) disclose various related uses for pentagonal prisms in optical heads; and
- c. Miyazaki et al (US Patent 6,181,666) disclose an optical system very similar to that disclosed in Applicant's specification.

***Conclusion***

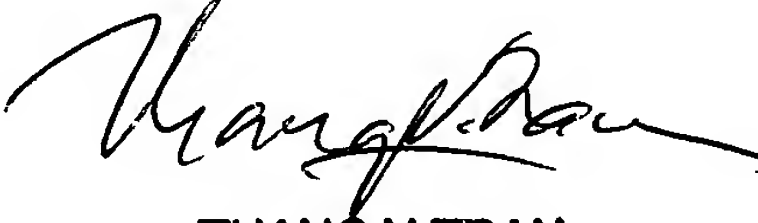
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571) 272-4248. The examiner can normally be reached on Monday-Friday, 8:30 AM - 4:30 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A.L. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Danielsén *ND*  
05/26/2006

  
**THANG V. TRAN**  
**PRIMARY EXAMINER**